Accident Records Studies

The **purpose** of studying traffic accident records is to find measures to **increase vehicle safety and reduce the frequency of accidents.** Traffic accident prevention programs are never completed. They should be a continuous study of accidents, violations, vehicle registrations and remedial actions taken. The study of records assists in the following areas:

- Identifying high accident rate locations, and taking corrective action.
- Evaluating roadway design factors.
- Planning remedial actions and selective enforcement programs.
- Evaluating these actions and their effectiveness through before and after comparisons.

The **validity** of any analysis **depends on the accuracy** of the raw information which is obtained. This is particularly important when studying causes of accidents. Accidents occur because of a variety of factors in complex combinations. For this reason, the terms "following too closely" or "speed excessive for conditions," for example, are often insufficient to provide for valid analysis.

Records under review must be accurate and detailed. Department of the Army is currently developing the Army Information Management System (AIMS) which uses automated data processing procedures.

A part of this system will be the Military Police Management Information System (MPMIS) and the Law Enforcement Reporting System (LERS). LERS will include subsystems on vehicle registration, offenses, traffic accidents and traffic violations. When implemented, these subsystems will greatly improve storage, retrieval and analysis of data for use by traffic managers.

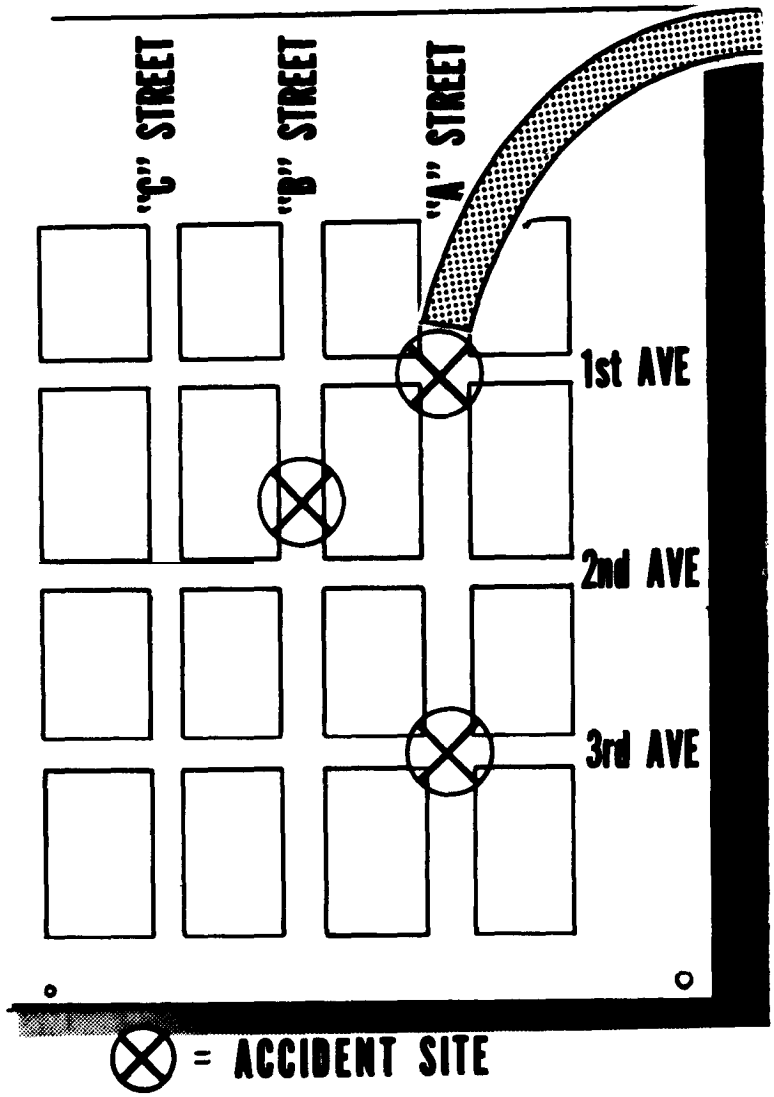
There are **six basic steps** in the study of accidents at a location. These require specific attention.

- ▶ Obtain sufficient accident data.
- ▶ Select high accident rate locations.
- ▶ Prepare collision and condition diagrams.
- ▶ Make field observations at the location during the time of accidents.
- ▶ Summarize facts.
- ▶ Analyze facts and field data, and recommend corrective actions.

Obtaining Data

The following information should be obtained when studying accidents:

- Location
- Day
- Month
- Year
- Hour
- Cause
- Type
- Light conditions
- Weather conditions
- Driver
- Driver's age
- Driver's sex
- Driver's experience
- Seat belt usage
- Command/Unit

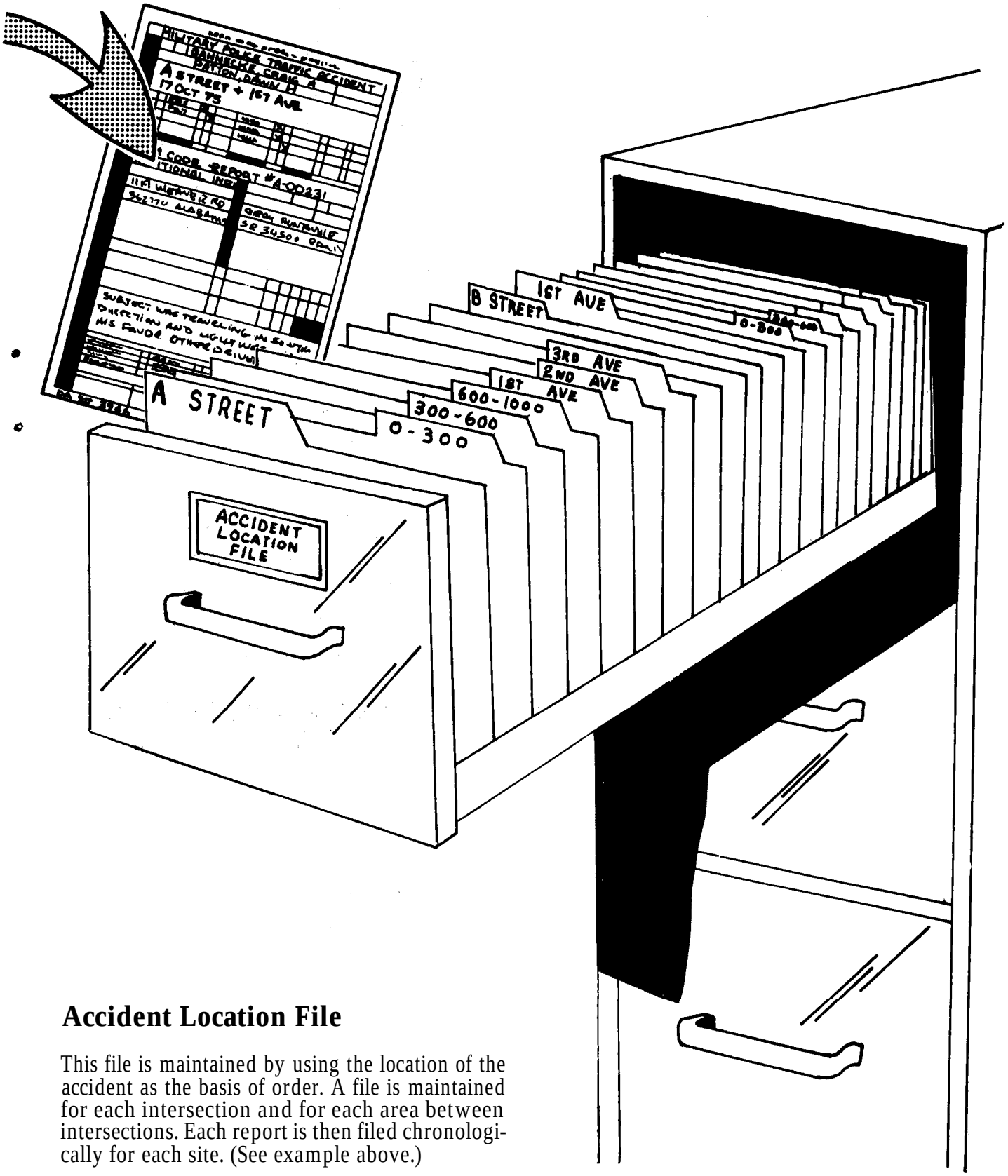


Accident Location File Index

- Traffic controls
- Injuries/fatalities.

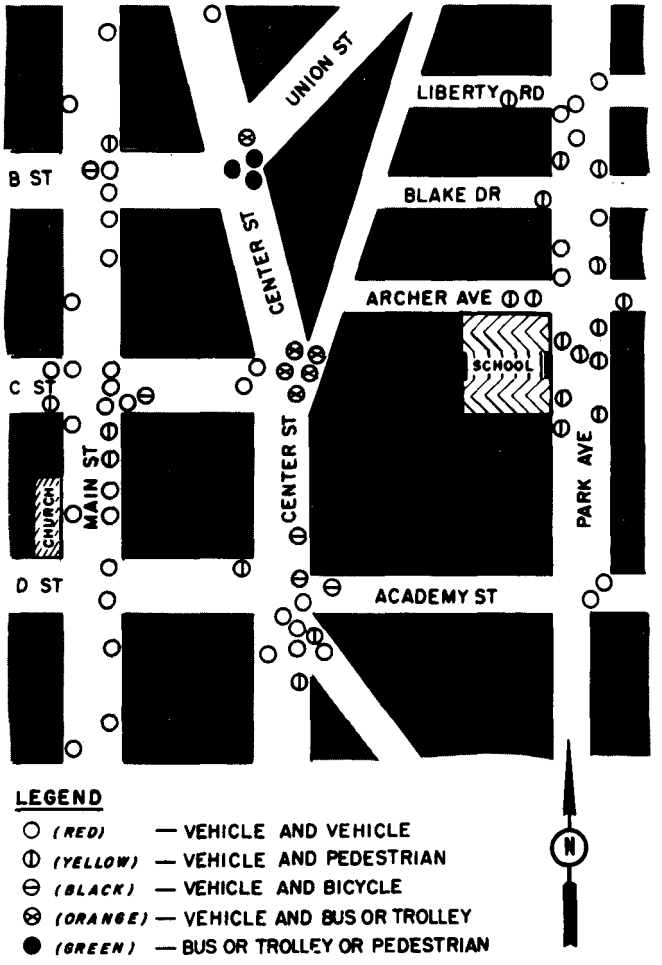
Selecting Locations

The two methods of determining accident locations through manual storage methods are **accident location files and spot maps.**



Accident Location File

This file is maintained by using the location of the accident as the basis of order. A file is maintained for each intersection and for each area between intersections. Each report is then filed chronologically for each site. (See example above.)



Sample Spot Map

Spot Maps

Spot maps are designed to show the complete roadnet on an installation, or any specific part of the roadnet. The traffic section posts accident locations on the map by using different colored map pins. Color of the pins can be used to represent different factors. Maps should be large enough for easy visibility. By reviewing these maps, high accident locations can be seen. In addition, if the map is made available to MPs preparing for patrol, it can act as a briefing and prevention aid. At the end of each year, maps should be photographed in color and filed for future reference and comparison with current maps.

Graphs and Charts

Line graphs and bar charts are useful in interpreting traffic data between two or more sets of information, such as the relationship between personal injury and apprehensions for moving vehicle violations.

Collision Diagrams

A collision diagram permits study and analysis of a particular intersection or curve at which a number of accidents have occurred. The diagram consists of an outline map of the location and symbols showing the direction of movement of vehicles and pedestrians involved in accidents. If stationary objects are important in accidents, they are included in the diagram. Each diagram should include:

Drawing of intersection.

Identification of diagram.

Identification of streets.

Plots of accidents to include:
- Direction of travel.
- Date of accident.
- Time.
- Road conditions.
- Weather conditions.
- Any unusual conditions (flood, storm, intoxication, etc.).

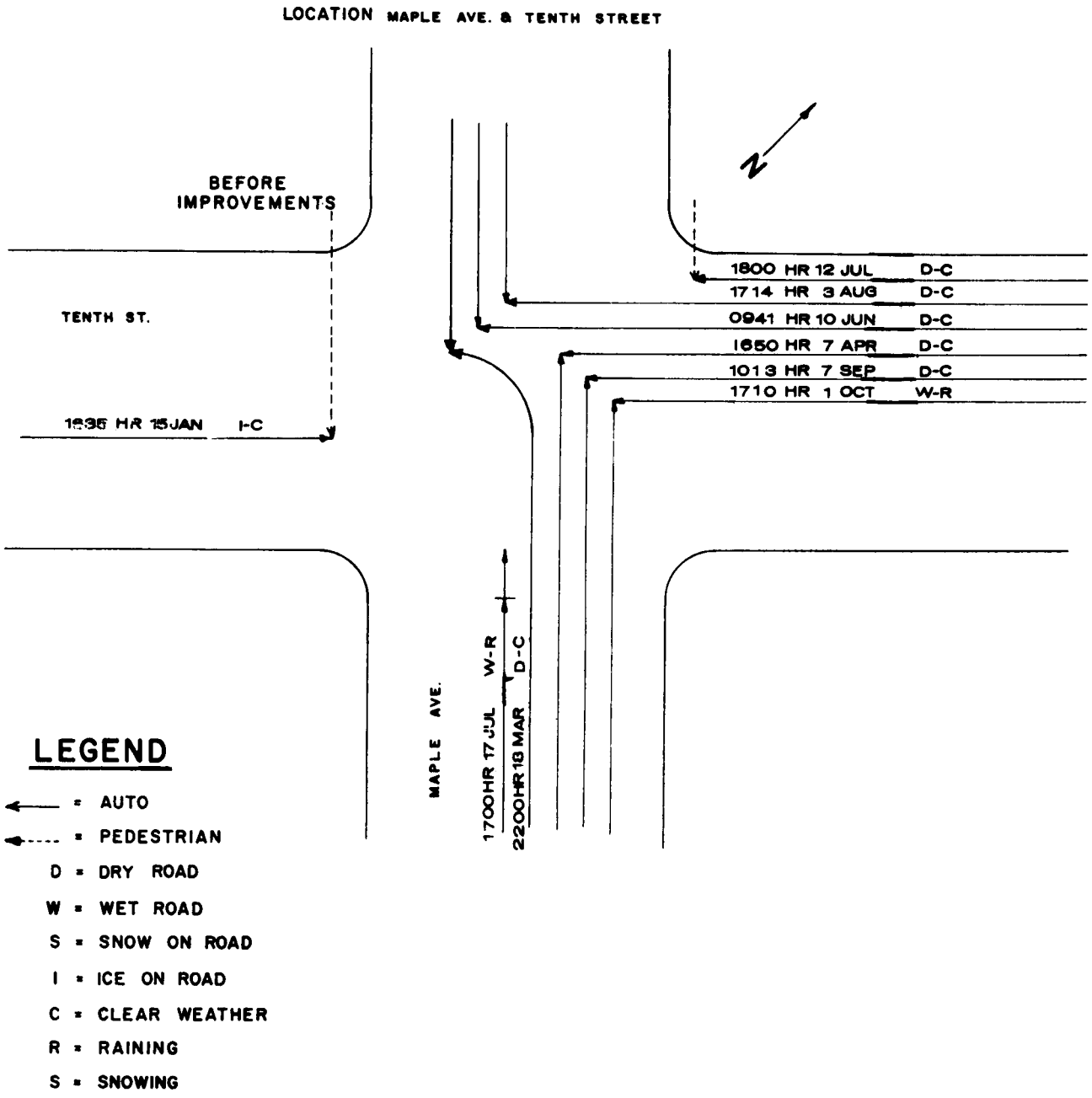
Care should be taken to insure the diagram does not show different sets of circumstances affecting the scene, such as one diagram showing an intersection before and after a stop sign has been installed.

After a diagram has been prepared, make a search for **points of similarity.** These may be:

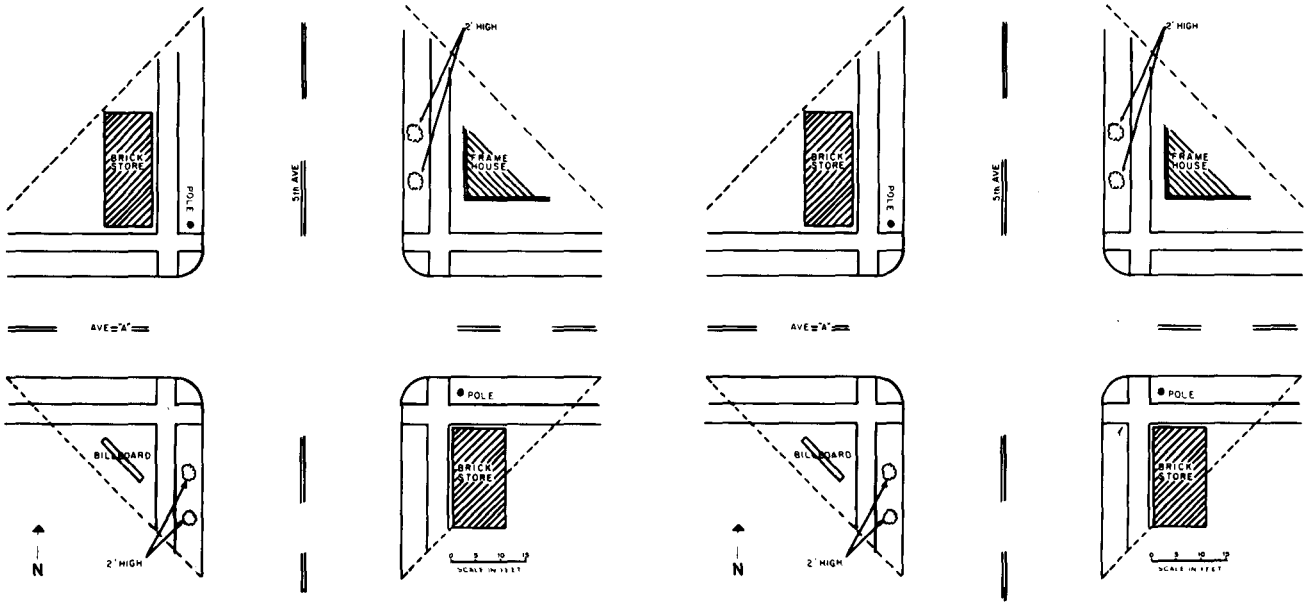
All accident cars coming from the same direction.

Colliding cars coming from the same directions such as northbound and eastbound.

Accidents of one type, such as cars turning left.



Collision Diagram



Condition Diagram

Accidents occurring during one season of the year.

Accidents occurring at a certain time of day or during certain lighting conditions.

Accidents occurring under the same weather conditions.

When points of similarity are determined, an investigation at the site should be made to confirm these facts. A sample collision diagram is on page 155.

Condition Diagrams

A condition diagram is a scale drawing which provides an accurate picture of the physical conditions present at the location under study. From this diagram the required visibility distance for the 85th percentile speed (see Chapter 22, Speed Studies) on the road, and the actual visibility triangle can be made. This will allow an evaluation of the effects obstructions have on the driver's view and road conditions.

A rough sketch of the location should be made at the scene and later transferred to an 8½ x 11-inch sheet of paper. A scale of 30 to 40 feet per inch should be used. Observations and measurements should include:

- Curbs
- Roadway limits
- Property lines
- Sidewalks
- Driveways
- View obstructions on corners
- Physical obstructions on roadway
- Ditches
- Bridges
- Traffic signals
- Signs
- Pavement marking
- Streetlights
- Grades
- Road surface
- Type of adjacent property
- Irregularities (potholes, dips, etc.)

Condition diagrams may indicate view obstructions are contributory causes of accidents. A driver proceeding at normal speed on one street should be able to see another vehicle approaching at normal speed from an intersecting street. Obstructions reduce this ability.

A driver should have the time and visibility to react and brake a vehicle. Any obstructions increase stopping distances.

The figure above is a sample condition diagram. The dotted lines represent the required visibility triangle; while the shaded portions show the actual visibility triangle.

Field Observations

Preparation of a condition diagram can be made in conjunction with making afield observation of the accident location. Reenactment of a collision can be made. The field observation should be made under the same weather and light conditions indicated as being present during most of the traffic accidents.

Analyzing and Summarizing

Facts gathered from accident studies should be presented in understandable and meaningful terms. This will help justify any recommendations made. In analysis, use the **repetitive principle of collisions.** This suggests that if certain conditions or combinations of conditions influence driver, vehicle, roadway, or control, an accident may occur. In other words, past performance is used to predict future events.

It has also been found that there is an inverse relationship between violations, citations and accidents. As proper traffic citations increase, accidents decrease. A useful tool in showing this is the **enforcement index (EI).** This is the ratio of all moving traffic violations divided by the number of accidents. This index may then be used to show fluctuations by day, week, or month, and enable adjustments to enforcement programs.

Recommendations

After the study is completed, recommendations for improvements should be made. These recommendations may include increased vehicle inspection standards, safety programs, education programs or changes in police operational procedures. Communication of the information derived from these studies is important. It is valuable to various staff offices and to the public. A traffic enforcement bulletin may be used to communicate this information to Military Police. This bulletin should list locations having the greatest hazards, causes, and times of accidents.